

# **Asymmetric Magnetic Emergence at the Sun**

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Observations of magnetic flux emergence in sunspots are showing significant asymmetry in both the magnetic flux and associated characteristics such as magnetic helicity. Such asymmetries are found to be an intrinsic property of the emerging field and as a consequence place severe constraints on the emergence process and the interaction of the emerging magnetic field with the sub-surface turbulent convection. Helicity injection into the solar atmosphere is thought to drive a range of energetic phenomena, including solar flares to coronal mass ejections, and its asymmetric nature is providing insight into the coronal current systems responsible for these phenomena. In this paper we will discuss the relationship between the magnetic flux asymmetry and the helicity asymmetry, and what we can learn from laboratory experiments with magnetized plasmas.